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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,703	02/24/2004	Chih-Feng Huang	JCLA12969	3675

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EXAMINER	
QUINTO, KEVIN V	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No.	Applicant(s)	
	10/786,703	HUANG ET AL.	
	Examiner	Art Unit	
	Kevin Quinto	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 5* is/are rejected.

7)☒ Claim(s) *3 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 3, 2005 have been fully considered but they are not persuasive. On p. 11 of the applicant's remarks, the applicant has stated that the applicant's current invention is different from the combination of the Tsui reference ("Integration of power LDMOS into low-voltage 0.5 μm BiCMOS technology," International Electron Devices Meeting, 1992, Technical Digest, p.27-30) and Hossain et al. (USPN 6,448,625 B1) in that the applicant uses an isolated n-well. However Tsui clearly uses an n-well as a means of isolation. Furthermore amended claim 1 is not patentable over the Tsui and Hossain combination since the claimed structure is met by the combination.

Claim Objections

2. Claims 1-5 are objected to because of the following informalities: the phrase "preventing from breakdown" in claim 1 is grammatically incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsui et al., "Integration of power LDMOS into low-voltage 0.5 μm BiCMOS technology," International Electron Devices Meeting, 1992, Technical Digest, p.27-30, in view of Hossain et al. (USPN 6,448,625 B1).

5. So far as understood in claims 1 and 5, Tsui et al., "Integration of power LDMOS into low-voltage 0.5 μm BiCMOS technology," International Electron Devices Meeting, 1992, Technical Digest, p.27-30 (hereinafter referred to as the "Tsui" reference), discloses a similar device. Figure 1 (the top left figure labeled "LDMOS" on p.29) of Tsui discloses a transistor with an n-well. The examiner notes the applicant has used the terms "first diffusion," "second diffusion," and "fourth diffusion" to describe how the n-well (the left edge of the "first diffusion region" and the right edge of the "second diffusion" touch each other) and the isolated p-well are fabricated. However this places claim 1 into the form of a **product-by-process claim**:

> Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi* et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in " product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

Claim 1 does not distinguish over the Tsui reference regardless of the process used to form the n-well or isolated p-well, because only the final product is relevant, and not the process of making such as using two diffusion regions to form an n-well or a fourth diffusion to form an isolated p-well. There is a drain diffusion region containing N+

conductivity-type ions. An isolated p-well is formed in the n-well. There is a source diffusion region having N+ conductivity-type ions, forming a source region in the n-well. A channel is formed between the source and the drain region. A polysilicon gate electrode is formed over the channel to control a current flow in the channel. There is a contact diffusion region containing P+ conductivity-type ions, forming a contact region in the p-well. There is an isolated p-well or p body region formed in the n-well. The isolated p-well encloses the source region and the contact region. Tsui does not disclose the use of p-field regions in the n-well region. However the use of such regions is well known in the art. Hossain et al. (US 6,448,625 B1, hereinafter referred to as the "Hossain" reference) discloses the use of p-field regions (108) in figure 3C. Figure 3C of Hossain shows that there are several p-fields (108); some of which are closer to the drain (106) relative to other p-fields (108) on the left side of the figure. These p-fields generate junction fields in the n-well to deplete a drift region (column 2, lines 58-60). Hossain states that using these regions has the benefit of increasing the breakdown voltage (column 2, lines 60-61). Furthermore Hossain states that a high breakdown voltage is desirable (column 1, lines 11-13). In view of Hossain, it would therefore be obvious to use p-field regions in the device of Tsui.

6. So far as understood in claim 2, the n-well provides a low-impedance path for the source region and restricts a transistor current flow in between the drain region and the source region.

Allowable Subject Matter

7. Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the examiner is unaware of any prior art which suggests an LDMOS device with several p-field regions in an n-well with the drain being spaced apart from the field oxide and the source being spaced apart from the field oxide and the p-well.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KVQ

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